

**Waste water treatment –  
clearly controlled.**

**IFAT ENTSORGA 2010 (September 13<sup>th</sup> - 17<sup>th</sup> 2010)  
International Trade Fair for  
water, sewage, waste and raw materials management**

**ProWinnert<sup>®</sup>**

# Waste water treatment – clearly controlled

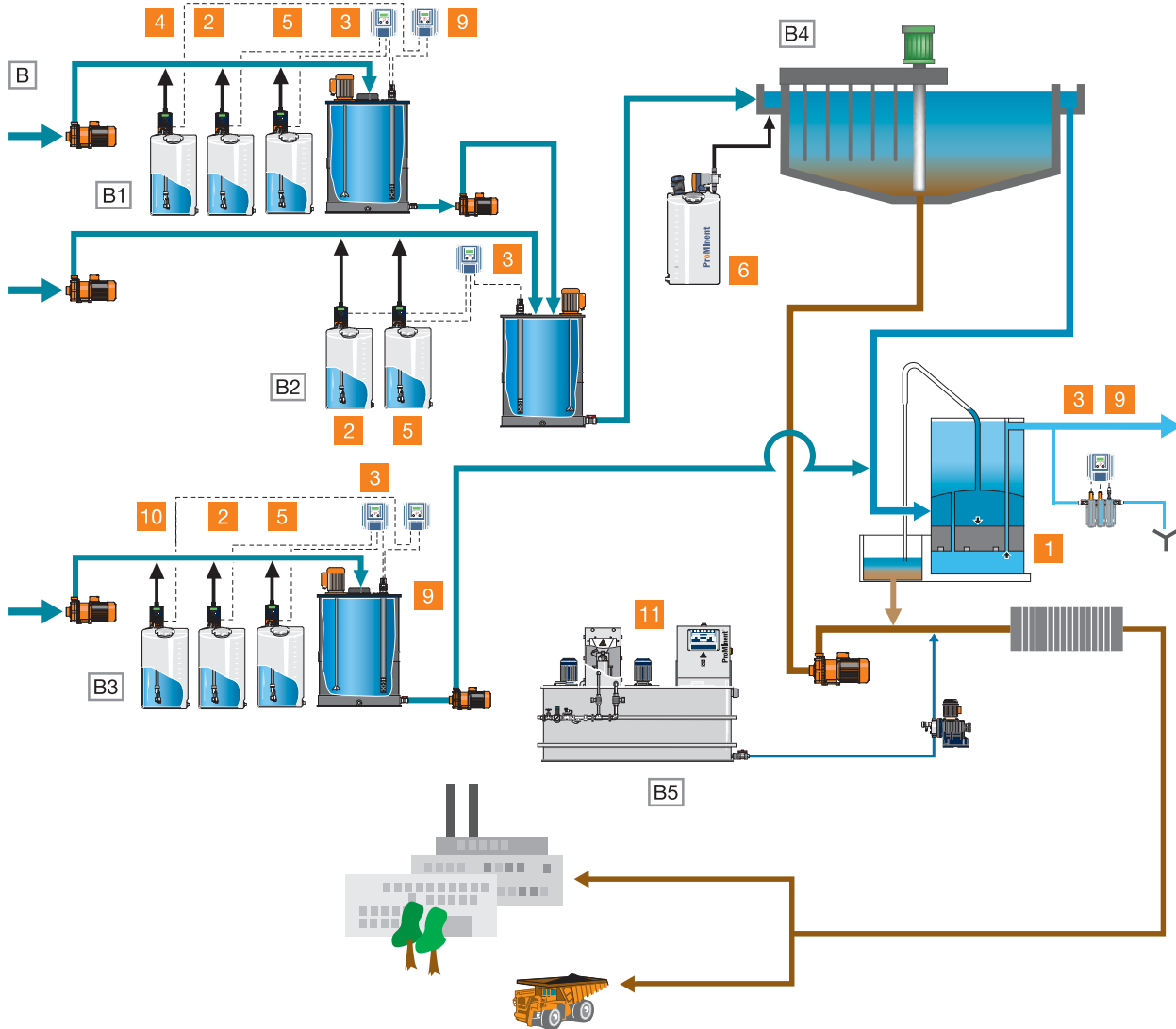
## Contents

page

|   |           |
|---|-----------|
| <b>Complete solutions for complex wastewater</b>                        | <b>1</b>  |
| <b>DULCO®flex</b>   | <b>2</b>  |
| DULCO®flex peristaltic Pump   | 2         |
| <b>Polymer Preparation and Dosing Systems Ultromat®</b>                 | <b>3</b>  |
| Ultromat® Systems   | 3         |
| Ultromat® AF/AT/ATF Continuous Flow Systems                             | 4         |
| Ultromat® AFP/ATP/ATFP 2-chamber Batch Systems                          | 5         |
| Ultromat® AFD/ATD/ATFD Double-Deck System                               | 6         |
| Ultromat® ATR Continuous Flow System (with round tanks)                 | 7         |
| Ultromat® AFK Continuous Flow System (only for liquid polyelectrolytes) | 8         |
| POLYMORE For Liquid Polyelectrolytes                                    | 9         |
| PolyRex For Powdery And Liquid Polyelectrolytes                         | 10        |
| Ultromat® MT For Batch Operation  | 11        |
| Big Bag Emptying Unit   | 11        |
| <b>Overview Dosing Systems DULCODOS® And Ultromat®</b>                  | <b>12</b> |
| Product Overview DULCODOS®  | 12        |
| <b>Gravity Filter</b>   | <b>13</b> |
| INTERFILT® SK   | 13        |
| <b>Panel-Mounted Measuring/Control Stations</b>                         | <b>15</b> |
| DULCOTROL® Panel-Mounted Measuring/Control Stations                     | 15        |

# Complete solutions for complex wastewater

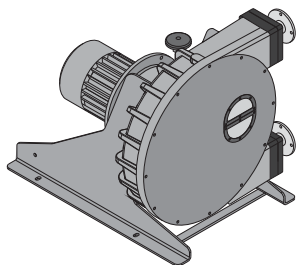
The treatment of wastewater is a complex process of caring for the valuable resource of water and prevention of environmental damage. Optimally designed processes ensure efficient cleaning of the wastewater and save money. Many processes are based on dosing of chemicals – often controlled and automated. ProMinent not only has years of experience in water treatment but can also offer a comprehensive and flexible range of Chemical Fluid Handling equipment.



- DULCO®flex hose pump
- 1 Gravity filter INTERFILT® SK
- 2 ProMinent® dosing station for sulphuric acid
- 3 pH measuring station DULCOMETER®/DULCOTEST®
- 4 ProMinent® dosing station for free chlorine
- 5 ProMinent® dosing station for caustic soda
- 6 ProMinent® dosing station for iron(III) chloride
- 9 Redox measuring station DULCOMETER®/DULCOTEST®
- 10 ProMinent® dosing station for sodium sulphite
- 11 Polyelectrolyte batching and dosing system Ultramat®

# DULCO®flex

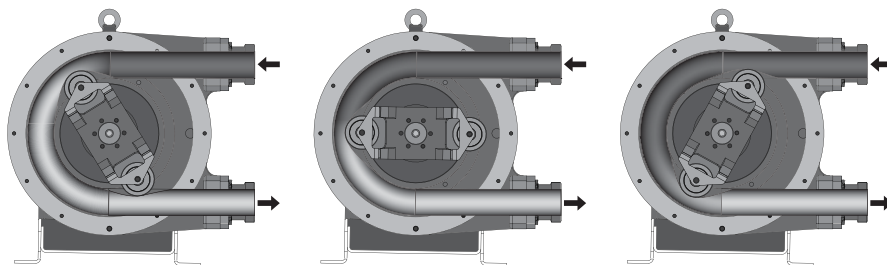
## DULCO®flex peristaltic Pump



P\_DX\_0010\_SW1

Key features of peristaltic pumps from ProMinent are their simple operation and compact, robust design. They are self-priming and operate without seals and valves. Owing to their large pump capacity range from 17 to 38,000 l/h and wide range of different hose materials, peristaltic pumps of the DULCO®flex series are suitable for use with almost all metering and feed operations, both in laboratories and in industry. Whereas the pumps are fitted with roller technology for low pressures of up to 8 bar, they have shoes for higher pressures of up to 15 bar.

The feed chemical is conveyed by the rotor squeezing the hose in the direction of flow. No valves are needed for this. Abrasive, viscous and sensitive media can thereby be gently conveyed. The pumping process is triggered by an elastomer hose, pressed by two rotating rollers or shoes against the pump housing. Once the rollers or shoes have passed by, the reinforced hose immediately becomes erect again and creates a vacuum at the inlet of the pump. Atmospheric pressure causes the medium to flow in. The feed rate is proportional to the speed of the pump. A vacuum device can optionally be used to assist the return to position of the hose on series DFCA and DFDA pumps, thereby improving their suction behaviour and ensuring the even feed of viscose media.



P\_DX\_0028\_SW3

DULCO®flex peristaltic pumps can be use to convey media with the following properties:

- pasty and solid-containing
- viscouse
- abrasive
- shear-sensitive
- outgassing
- corrosive

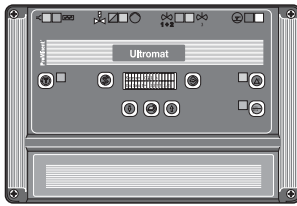
The pumps can be selected with the aid of an identcode:

**Overview:**

| Type | Application | Feed rate at max. pressure<br>l/h | Max. Pressure<br>bar | Rollers/shoes | Rotor bearing |
|------|-------------|-----------------------------------|----------------------|---------------|---------------|
| DFAa | Laboratory  | 105                               | 2                    | Rollers       | Drive         |
| DFBa | Industry    | 431                               | 8                    | Rollers       | Drive         |
| DFCa | Industry    | 10,100                            | 8                    | Rollers       | Ball bearings |
| DFDa | Industry    | 15,000                            | 15                   | Shoes         | Ball bearings |

# Polymer Preparation and Dosing Systems Ultromat®

## Ultromat® Systems



pk\_3\_027

Ultromat® systems have been designed specially for the production of stock solutions and process solutions of synthetic flocculants (polyelectrolyte) and have been well proven in the field.

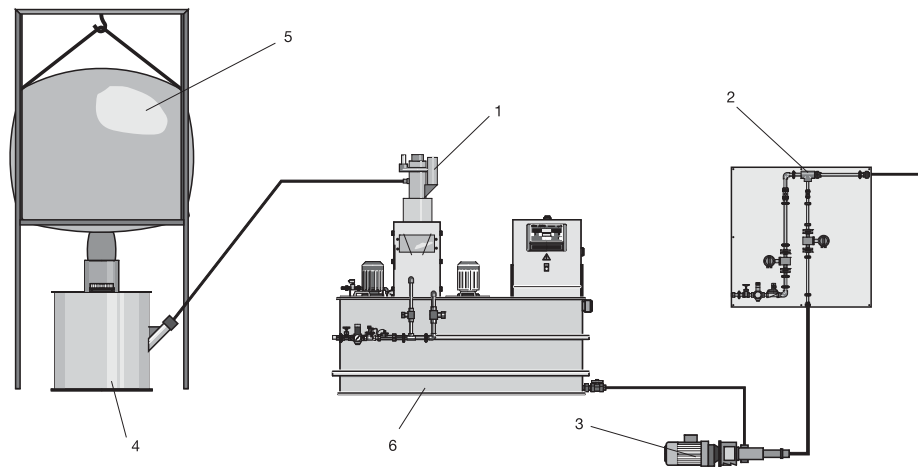
The use of polyelectrolyte as a flocculant or flocculation aid has a very large range of applications. It can be used wherever colloidal solids require to be removed from liquids on a commercial scale.

Recommended applications include:

- Wastewater and sludge treatment
- Paper production
- Drinking and process water treatment
- Treatment of sand and diatomite
- Treatment of brine
- Ore enrichment

The Ultromat® models AF/AT/ATF, AFK, AFP/ATP/ATFP are fitted with a ProMinent® compact controller. The solution concentrations and the volumetric settings of the dry feeder and the liquid concentrate pump are controlled by the operator. Warnings are indicated by alarm and text messages in the display. A flow monitor continuously determines the input of dilution water and values are displayed. Based on the preset solution concentration the controller calculates the requirement of polymer and controls the dry feeder or the concentrate pump in analogue form. Thus, the concentration of polymer solution remains constant even when the water supply fluctuates..

### Application example for a complete polymer dosing system:

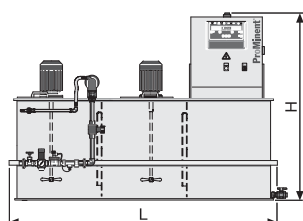


- 1 Powder delivery unit
- 2 Re-dilution
- 3 Transfer pump
- 4 Powder storage tank
- 5 Big-Bag
- 6 Ultromat®

pk\_7\_028

# Polymer Preparation and Dosing Systems Ultromat®

## Ultromat® AF/AT/ATF Continuous Flow Systems

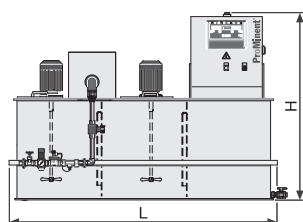


pk\_7\_056\_2  
Ultromat® AF

Ultromat® continuous flow systems for the preparation of flocculants to prepare a 0.05 - 0.5 % polymer solution. The tank is comprised of three chambers. Discharge of the polymer solution as well as emptying of the individual chambers is performed at the front end of the tank.

The following types of polymers can be processed:

- Type AF0: only liquid polymers
- Type AT0: only powdery polymers
- Type ATF: liquid and powdery polymers

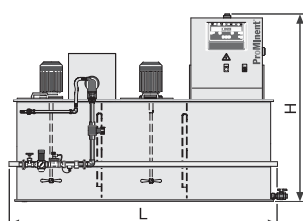


pk\_7\_083  
Ultromat® AT

A selection system (Identcode) helps to easily, quickly and flexibly adapt the continuous flow system to your application.

Selectable components:

- Ultromat® type (type of polymers: liquid, powder)
- Tank size /discharge volume
- Layout (standard or mirror-imaged)
- Wetting fitting (Y wetting fitting or feed funnel)
- Electrical connection
- Control type
- Options hopper loader TG 205
- Add-on hopper (to fill the powder feeder with powdery polymer)
- Vibrator for powder feeder (promotes continuous feeding of polymer in the powder feeder)
- Agitator for 3rd chamber (recommended)
- Liquid concentrate pump (pump to transport the liquid concentrate from the storage tank to the Ultromat®)
- Monitoring for liquid concentrate pump (float switch for concentrate tank prevents dry running. Flow monitor protects stator/rotor of the Spectra pump if flow stops)
- Language (default of the language when selecting ProMinent® control)



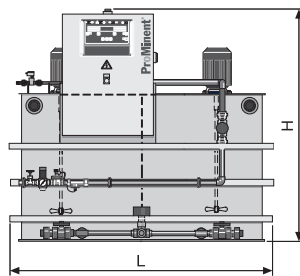
pk\_7\_098  
Ultromat® ATF

### Technical Data

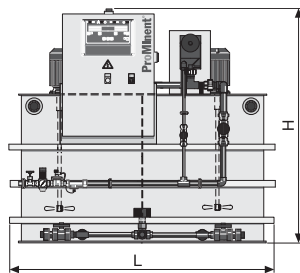
|                                |        |        |        |        |        |         |
|--------------------------------|--------|--------|--------|--------|--------|---------|
| <b>Discharge volume</b>        | l/h    | 400    | 1,000  | 2,000  | 4,000  | 8,000   |
| <b>Tank volume</b>             | l      | 400    | 1,000  | 2,000  | 4,000  | 8,000   |
| <b>Diluent water max.</b>      | l/h    | 1,500  | 1,500  | 3,000  | 6,000  | 12,000  |
| <b>Water pressure</b>          | bar    | 3-5    | 3-5    | 3-5    | 3-5    | 3-5     |
| <b>Powdery polymer</b>         | kg/h   | 0.8-18 | 0.8-18 | 0.8-18 | 3.6-55 | 4.8-110 |
| <b>Length</b>                  | mm     | 1,960  | 2,581  | 3,256  | 3,243  | 4,539   |
| <b>Width</b>                   | mm     | 905    | 970    | 1,155  | 1,515  | 1,922   |
| <b>Height</b>                  | mm     | 1,250  | 1,600  | 1,750  | 2,182  | 2,290   |
| <b>Water connection</b>        | "      | 1      | 1      | 1      | 1 1/2  | 2       |
| <b>Discharge nozzle DN</b>     | mm     | 25     | 25     | 32     | 40     | 50      |
| <b>Concentrate addition DN</b> | mm     | 15     | 15     | 15     | 20     | 20      |
| <b>Voltage/Frequency</b>       | VAC/Hz | 400/50 | 400/50 | 400/50 | 400/50 | 400/50  |
| <b>Power Uptake</b>            | kW     | 1.5    | 2.6    | 3.2    | 5.0    | 9.5     |

# Polymer Preparation and Dosing Systems Ultromat®

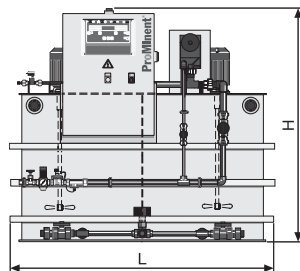
## Ultromat® AFP/ATP/ATFP 2-chamber Batch Systems



pk\_7\_058\_2  
Ultromat® AFP



pk\_7\_015\_2  
Ultromat® ATP



pk\_7\_057  
Ultromat® ATFP

Ultromat® 2-chamber batch systems for the preparation of flocculants to prepare a 0.05 - 0.5 % polymer solution. The tank is comprised of two separate tanks.

The following types of polymers can be processed:

- Type AFP: only liquid polymers
- Type ATP: only powdery polymers
- Type ATFP: liquid and powdery polymers

The 2-chamber batch systems basically consist of the following components:

- Tanks with reinforcements and brackets for mounting of other aggregates, material of the tanks PP (standard) or stainless steel (option)
- Dry feeder with metering pipe heating and powder shortage sensor
- Piping for metering of liquid concentrate (only AFP and ATFP)
- Wetting system for flushing-in and wetting of the powder, incl. wetting cone and injector (only ATP and ATFP)
- Water fitting with flow meter and fitting kit for in-line water and reversal unit
- Set of change-over valves for filling and discharge of polymer solution
- 2 slow electric agitators
- Control cabinet with ProMinent® control for automatic control of the entire system

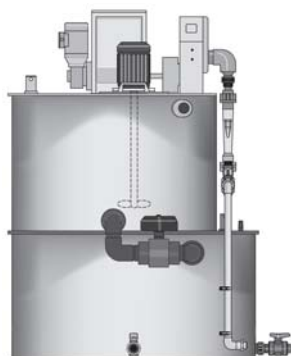
### Technical Data

|                                |        | 400     | 1,000     | 2,000     | 4,000     |
|--------------------------------|--------|---------|-----------|-----------|-----------|
| <b>Discharge volume</b>        | l/h    | 400     | 1,000     | 2,000     | 4,000     |
| <b>Tank volume</b>             | l      | 2 x 400 | 2 x 1,000 | 2 x 2,000 | 2 x 4,000 |
| <b>Diluent water max.</b>      | l/h    | 1,600   | 4,000     | 8,000     | 14,000    |
| <b>Water pressure</b>          | bar    | 3-5     | 3-5       | 3-5       | 3-5       |
| <b>Powdery polymer</b>         | kg/h   | 0.8-18  | 0.8-18    | 3.6-55    | 4.8-110   |
| <b>Length</b>                  | mm     | 1,820   | 2,680     | 3,180     | 4,380     |
| <b>Width</b>                   | mm     | 1,285   | 1,820     | 1,970     | 2,645     |
| <b>Height</b>                  | mm     | 1,680   | 1,770     | 2,180     | 2,400     |
| <b>Water connection</b>        | "      | 1       | 1 1/4     | 1 1/2     | 2         |
| <b>Discharge nozzle DN</b>     | mm     | 25      | 32        | 40        | 50        |
| <b>Concentrate addition DN</b> | mm     | 15      | 15        | 20        | 20        |
| <b>Voltage/Frequency</b>       | VAC/Hz | 400/50  | 400/50    | 400/50    | 400/50    |
| <b>Power Uptake</b>            | kW     | 2.5     | 3.2       | 5.5       | 7.0       |

The systems are also available with storage tank, aerator, level sensors, equipment for pneumatically operated powder feed from the delivery drum (e.g. Big-Bag), dilution units, flushing units, metering gauges and metering pumps for the concentrate and the prepared solution.

# Polymer Preparation and Dosing Systems Ultramat®

## Ultramat® AFD/ATD/ATFD Double-Deck System



pk\_7\_085\_sw  
Ultramat® AFD

Ultramat® double-deck systems for the preparation of flocculants to prepare a 0.05 – 0.5 % polymer solution. The tank is comprised of two separate tanks on top of each other.

The following types of polymers can be processed:

- Type AFD: only liquid polymers
- Type ATD: only powdery polymers
- Type ATFD: liquid and powdery polymers

The double-deck systems basically consist of the following components:

- two separate tanks on top of each other, material PP/PE
- dry feeder with metering pipe heating and powder shortage sensor
- piping for metering of liquid concentrate (only AFD and ATFD)
- wetting system for flushing-in and wetting of the powder (only ATD and ATFD)
- water fitting with flow meter and fitting kit for in-line water
- motor valve for filling the bottom tank
- slow electric agitator in the upper tank
- control cabinet with S7 control for automatic control of the entire system.

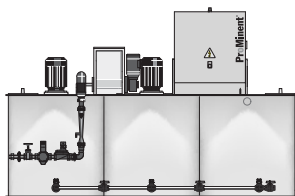
### Technical Data

|                                |        |         |           |           |
|--------------------------------|--------|---------|-----------|-----------|
| <b>Discharge volume</b>        | l/h    | 400     | 1,000     | 2,000     |
| <b>Tank volume</b>             | l      | 2 x 400 | 2 x 1,000 | 2 x 2,000 |
| <b>Diluent water max.</b>      | l/h    | 1,600   | 4,000     | 8,000     |
| <b>Water pressure</b>          | bar    | 3–5     | 3–5       | 3–5       |
| <b>Powdery polymer</b>         | kg/h   | 0.8–18  | 0.8–18    | 3.6–55    |
| <b>Length</b>                  | mm     | 1,300   | 1,600     | 2,000     |
| <b>Width</b>                   | mm     | 1,300   | 1,600     | 2,000     |
| <b>Height</b>                  | mm     | 2,050   | 2,700     | 3,000     |
| <b>Water connection</b>        | "      | 1       | 1 1/4     | 1 1/2     |
| <b>Discharge nozzle DN</b>     | mm     | 25      | 32        | 40        |
| <b>Concentrate addition DN</b> | mm     | 15      | 15        | 20        |
| <b>Voltage/Frequency</b>       | VAC/Hz | 400/50  | 400/50    | 400/50    |
| <b>Power Uptake</b>            | kW     | 1.5     | 2.6       | 3.2       |

The systems are also available with storage tank, aerator, level sensors, equipment for pneumatically operated powder feed from the delivery drum (e.g. Big-Bag), dilution units, flushing units, metering gauges and metering pumps for the concentrate and the prepared solution.

# Polymer Preparation and Dosing Systems Ultromat®

## Ultromat® ATR Continuous Flow System (with round tanks)



P\_UL\_0020\_SW

Ready-for-use, assembled, automatic 3-chamber preparation system for powdery flocculants to prepare a 0.05 - 0.5 % polymer solution. The Ultromat® consists of 3 individual round PP tanks with the functions preparation, maturing, and storage tank. The round tanks are hydraulically connected to each other through overflow channels. The tanks are extraordinarily stable and require not additional reinforcements. This also significantly reduces the transport weight of the Ultromat system.

The Ultromat® basically consists of the following components:

- Ultromat tank comprising 3 individual round PP tanks with the functions preparation, maturing, and storage tank
- Dry feeder with drive motor, metering pipe heating and powder hopper with plug-in cover
- Wetting system for flushing-in and wetting of the powder, incl. wetting cone, flow meter and fitting kit for in-line water
- 2 slow electric agitators
- Control cabinet for automatic control of the entire system

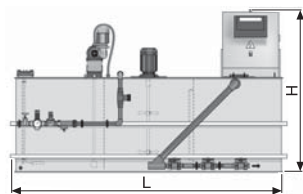
### Technical Data

|                            |        |        |        |        |
|----------------------------|--------|--------|--------|--------|
| <b>Discharge volume</b>    | l/h    | 400    | 1,000  | 2,000  |
| <b>Tank volume</b>         | l      | 400    | 1,000  | 2,000  |
| <b>Diluent water max.</b>  | l/h    | 1,500  | 1,500  | 3,000  |
| <b>Water pressure</b>      | bar    | 3–5    | 3–5    | 3–5    |
| <b>Powdery polymer</b>     | kg/h   | 0.8–18 | 0.8–18 | 0.8–18 |
| <b>Length</b>              | mm     | 2,164  | 2,464  | 2,950  |
| <b>Width</b>               | mm     | 883    | 983    | 1,157  |
| <b>Height</b>              | mm     | 1,216  | 1,566  | 1,716  |
| <b>Water connection</b>    | "      | 1      | 1      | 1      |
| <b>Discharge nozzle DN</b> | mm     | 25     | 25     | 32     |
| <b>Voltage/Frequency</b>   | VAC/Hz | 400/50 | 400/50 | 400/50 |
| <b>Power Uptake</b>        | kW     | 1.5    | 2.6    | 3.2    |

|                           | Use solution<br>l/h | Order no. |
|---------------------------|---------------------|-----------|
| <b>Ultromat® ATR 400</b>  | 400                 | 1033810   |
| <b>Ultromat® ATR 1000</b> | 1,000               | 1033811   |
| <b>Ultromat® ATR 2000</b> | 2,000               | 1033812   |

# Polymer Preparation and Dosing Systems Ultromat®

## Ultromat® AFK Continuous Flow System (only for liquid polyelectrolytes)



pk\_7\_087  
Ultromat® AFK

Ready-for-use, assembled, automatic 2-chamber continuous flow system for liquid flocculants to prepare a 0.05 – 1.0% metering solution, including an integrated day tank to store liquid concentrate.

The day tank can be continuously refilled through a transfer pump (e.g. Spectra) from the central chemicals storage. Thus, suction problems do not occur when replacing the delivery drum because the suction lance is permanently immersed in the liquid polymer.

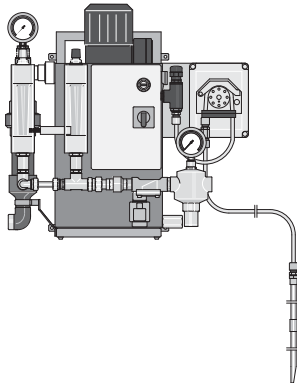
The Ultromat® AFK basically consists of the following components:

- combined preparation and storage tank with integrated day tank for liquid concentrate. Material of the tank PP (standard) or stainless steel (option)
- metering pump Sigma (e.g.: S1CA H 12017 PVT 0000UA01000) with 4-20mA current input for proportional metering of liquid concentrate, including metering valve and suction lance.
- dilution system with fitting kit and flow meter for the diluent water
- slow electric agitator with 2 propellers
- control cabinet for automatic control of the entire system.

### Technical Data

| Type                           |        | AFK260          | AFK660          | AFK1300         | AFK2600         |
|--------------------------------|--------|-----------------|-----------------|-----------------|-----------------|
| <b>Discharge volume</b>        | l/h    | 400             | 1,000           | 2,000           | 4,000           |
| <b>Tank volume</b>             | l      | 260             | 660             | 1,300           | 2,600           |
| <b>Diluent water max.</b>      | l/h    | 1,500           | 1,500           | 3,000           | 6,000           |
| <b>Water pressure</b>          | bar    | 3–5             | 3–5             | 3–5             | 3–5             |
| <b>Metering pump Capacity</b>  | l/h    | 17              | 17              | 35              | 50              |
| <b>Metering pump type</b>      |        | S1CaH 12017 PVT | S1CaH 12017 PVT | S1CaH 12035 PVT | S1CaH 10050 PVT |
| <b>Length</b>                  | mm     | 1,640           | 2,276           | 2,917           | 2,954           |
| <b>Width</b>                   | mm     | 925             | 960             | 1,110           | 1,530           |
| <b>Height</b>                  | mm     | 1,250           | 1,605           | 1,720           | 1,952           |
| <b>Water connection</b>        | "      | 1               | 1               | 1               | 1 1/2           |
| <b>Discharge nozzle DN</b>     | mm     | 25              | 25              | 32              | 40              |
| <b>Concentrate addition DN</b> | mm     | 15              | 15              | 15              | 20              |
| <b>Voltage/Frequency</b>       | VAC/Hz | 400/50          | 400/50          | 400/50          | 400/50          |
| <b>Power Uptake</b>            | kW     | 1.5             | 2.6             | 3.2             | 5.0             |

## POLYMORE For Liquid Polyelectrolytes



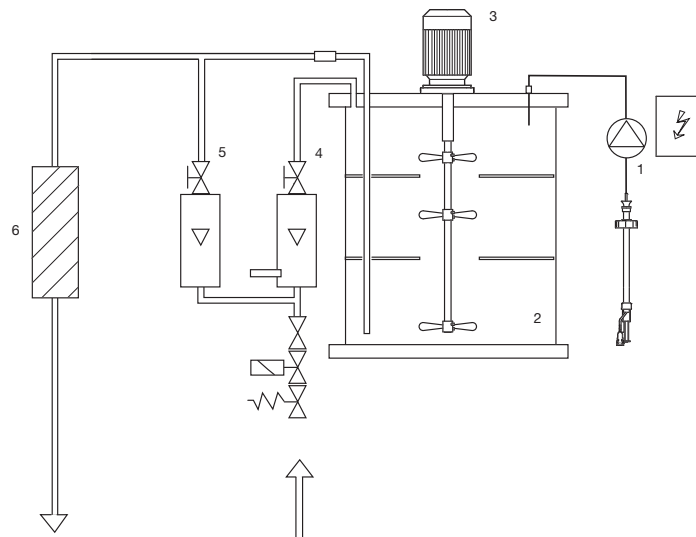
POLYMORE is an in-line polymer preparation station for the processing of liquid polymers. Using a peristaltic pump, the liquid polymer is metered into the multi-zone mixer unit to the diluent water and processed into a homogeneous and effective polymer solution. The unit was designed for wall mounting and thus requires only little space. For commissioning, only water, liquid polymer and the supply voltage have to be connected to the unit. If the maturing time is not sufficient for certain applications, a maturing tank with agitator and metering pump can be installed downstream.

POLYMORE basically consists of the following components:

- peristaltic pump for metering the liquid polymer
- water fitting including pressure reducer, solenoid valve
- flameproof mixer unit for an effect preparation of the polymer solution
- re-dilution unit with static mixer and manometer
- control for automatic control of the system. manual or 4-20 mA control of the peristaltic pump.

pk\_7\_091

|                             | Diluent water<br>max.<br>l/h | Metering output<br>liquid polymer<br>kg/h | Order no. |
|-----------------------------|------------------------------|---|-----------|
| <b>POLYMORE mini 2-0.08</b> | 120                          | 0.08                                      | 1029568   |
| <b>POLYMORE mini 3-0.6</b>  | 180                          | 0.60                                      | 1029570   |
| <b>POLYMORE mini 5-0.6</b>  | 300                          | 0.60                                      | 1029571   |
| <b>POLYMORE mini 5-1.2</b>  | 300                          | 1.20                                      | 1029572   |
| <b>POLYMORE mini 10-1.2</b> | 600                          | 1.20                                      | 1029574   |
| <b>POLYMORE mini 10-2.4</b> | 600                          | 2.40                                      | 1029575   |
| <b>POLYMORE mini 30-3.0</b> | 1,800                        | 3.00                                      | 1029576   |
| <b>POLYMORE duo 40-6.0</b>  | 2,400                        | 4.00                                      | 1029577   |
| <b>POLYMORE duo 65-9.0</b>  | 3,900                        | 8.00                                      | 1029579   |
| <b>POLYMORE midi 100-12</b> | 6,000                        | 12.00                                     | 1029580   |
| <b>POLYMORE midi 160-24</b> | 9,600                        | 20.00                                     | 1029581   |
| <b>POLYMORE maxi 300-54</b> | 18,000                       | 50.00                                     | 1029584   |

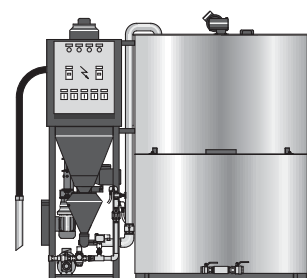


- 1 Peristaltic pump
- 2 Mixer unit
- 3 Agitator
- 4 Diluent water
- 5 Diluent water
- 6 Static mixer

AP\_UL\_0002\_SW

# Polymer Preparation and Dosing Systems Ultromat®

## PolyRex For Powdery And Liquid Polyelectrolytes



pk\_7\_092

PolyRex is a double-deck preparation station for the processing of liquid and powdery polymers. The preparation station consists of the delivery and mixer unit and the two double-deck tanks made of stainless steel. The upper tank is the preparation/maturation tank, the bottom tank is the storage tank for the prepared polymer solution. The powdery polymer is transported to the powder feeder by a vacuum conveyor and mixed with water in the bottom mixer unit. The solution is then transferred to the upper tank (preparation/maturation tank) using the water pressure of the diluent water. Having matured, the solution can be transferred to the bottom storage tank via the motor valve.

When using liquid polymers, the system switches to the Spectra eccentric screw pump.

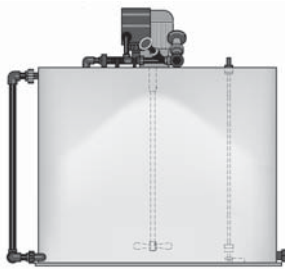
The system is automatically controlled by a Siemens PLC S7.

PolyRex basically consists of the following components:

- vacuum conveyor and powder feeder to meter powdery polymers and an eccentric screw pump to meter liquid polymers.
- water fitting with wetting cone and injector to produce an effective and homogeneous -polymer solution from powdery polymers (modified system when using liquid polymers)
- double-deck tank made of stainless steel for maturing and storing the polymer solution.
- motor valve to transfer the solution to the storage tank.
- agitator in the upper tank for a gentle mixing of the polymer solution
- control cabinet with S7 control for automatic control of the system.

|                    | Tank volume<br>m <sup>3</sup> | Discharge<br>volume<br>l/h | Metering output<br>liquid polymer<br>kg/h | Order no. |
|--------------------|-------------------------------|----------------------------|---|-----------|
| <b>PolyRex 0.6</b> | 2 x 0.30                      | 240                        | 1.2                                       | 1029556   |
| <b>PolyRex 1.0</b> | 2 x 0.60                      | 460                        | 2.3                                       | 1029558   |
| <b>PolyRex 2.0</b> | 2 x 1.00                      | 940                        | 4.7                                       | 1029559   |
| <b>PolyRex 3.0</b> | 2 x 1.50                      | 1,280                      | 6.4                                       | 1029560   |
| <b>PolyRex 4.0</b> | 2 x 2.00                      | 1,900                      | 9.5                                       | 1029562   |
| <b>PolyRex 5.4</b> | 2 x 2.70                      | 2,400                      | 12.0                                      | 1029563   |
| <b>PolyRex 6.6</b> | 2 x 3.30                      | 3,200                      | 16.0                                      | 1029564   |
| <b>PolyRex 8.4</b> | 2 x 4.20                      | 3,820                      | 19.2                                      | 1029565   |

## Ultromat® MT For Batch Operation



pk\_7\_088

For manual preparation of products in liquid and powder form in batch operation. These systems are used if continuous operation is not required. The flocculant solution is prepared manually as batch. Having matured, it can then be metered.

**The systems consist of:**

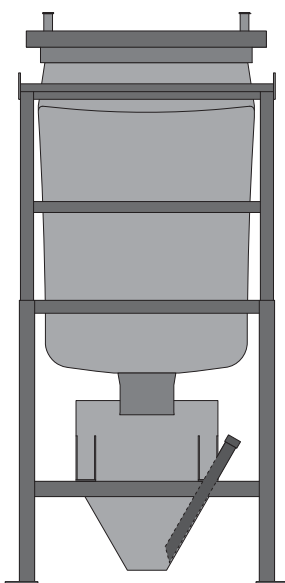
- 1 Batching tank made of PP
- 1 Wetting system for flushing-in and wetting of the powder, incl. wetting cone, injector and fitting kit for in-line water
- 1 Slow electric agitator
- 1 Level switch with three switching points

### Technical Data

| Type                |        | MT 140 | MT 250 | MT 500 | MT 1000 | MT 2000 | MT 3000 | MT 4000 | MT 5000 |
|---------------------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| Discharge volume    | l/h    | 120    | 210    | 440    | 920     | 1,890   | 2,850   | 3,800   | 4,800   |
| Tank volume         | l      | 120    | 210    | 440    | 920     | 1,890   | 2,850   | 3,800   | 4,800   |
| Diameter of tank(D) | mm     | 640    | 640    | 850    | 1,250   | 1,450   | 1,750   | 1,650   | 1,650   |
| Height of tank (H1) | mm     | 700    | 1,100  | 1,000  | 1,000   | 1,500   | 1,600   | 2,050   | 2,550   |
| Height              | mm     | 1,020  | 1,410  | 1,300  | 1,340   | 1,840   | 2,000   | 2,400   | 2,900   |
| Water connection DN | mm     | 20     | 20     | 20     | 25      | 32      | 40      | 40      | 40      |
| Discharge nozzle DN | mm     | 20     | 20     | 20     | 25      | 32      | 40      | 40      | 50      |
| Voltage/Frequency   | VAC/Hz | 400/50 | 400/50 | 400/50 | 400/50  | 400/50  | 400/50  | 400/50  | 400/50  |
| Power Uptake        | kW     | 0.18   | 0.55   | 0.75   | 1.10    | 2.20    | 3.00    | 3.00    | 3.00    |

The systems are also available with rinsing water fitting, level indicator and switchgear.

## Big Bag Emptying Unit



P\_UL\_0021\_SW

This emptying unit is used to accommodate and empty Big Bags weighing up to 1,000 kg. The Big Bags are suspended in the frame with the aid of a lifting cross bar. The 30-litre powder storage vessel is used to transfer the powder into a feed unit.

The emptying unit comprises the following components:

- Frame 1570 x 1300 x 2540 mm (WxLxH). The height can be adjusted up to 2040 mm
- Suspension cross bar
- Powder storage vessel with powder filling sensor, 30-litre content

|                       | Tank volume | Order no. |
|-----------------------|-------------|-----------|
| Big Bag Emptying Unit | 30 l        | -         |

# Overview Dosing Systems DULCODOS® And Ultromat®

## Product Overview DULCODOS®

Dosing now made even easier. The pre-assembled, complete solutions from ProMinent are available immediately, ready for use for the most important applications. The sensor system, controller and dosing pump, together with the necessary tanks, make up a unit that can take on your task with no installation expenditure.

Compared to separate components, dosing systems offer three big advantages:

- Only one supplier and contact
- No interface problems between the separate components
- Customers do not need their own installation service. On request, the entire system is supplied pre-assembled and ready for use, or installed and commissioned on your site by our technicians.

As a customer, you get a ready-made solution which only needs electrical and hydraulic connections. We manufacture all our dosing systems in-house, which means that we make the main components used, such as dosing pump, controller and sensor system, and also assemble the systems here in our works. This guarantees ProMinent® quality.



pk\_7\_076

### DULCODOS® eco

Net volume between 35 and 1000 litres.

Dosing stations with tank, drip pan, agitator, and metering pump for storing and metering of liquid chemicals. A selection system (Identcode) helps to easily, quickly and flexibly adapt the metering station to the metering task



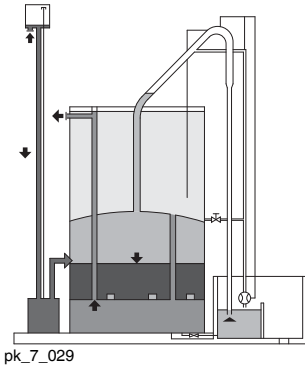
pk\_7\_082

### DULCODOS® Custom

The customer-specific dosing systems DULCODOS® custom are individually designed, constructed and supplied according to customer preferences. Also according to ATEX (explosion-proof). You as our customer do not have to perform any installation work. If requested, we will also commission the systems at your site.

# Gravity Filter

## INTERFILT® SK



Filtration is one of the most important basic technical processes in water treatment. It is a mechanical separation process in which suspended particles in water are retained in a filter layer (e.g. a layer of sand) through which water is passed.

Raw water is generally filtered through filtration plant using sand as the filter layer.

During the filtration process the pores in the filter layer become blocked by the contaminants removed from the raw water passing through it. This leads to a gradually increasing drop in pressure.

The “back washing phase” begins once the minimum permitted pressure level is reached in the “operating phase”. Here, the impurities are flushed out of the filter layer. During the operating phase, water passes downwards through the filter, during the back-washing phase, it travels back up through the filter layer.

The layer of sludge which has built up on the surface of the filter layer is broken up at the start of the back washing process, creating a fluidised bed.

The rotating motion of the grains of sand removes the dirt particles which have become attached to the surface of the granules and they are carried away from the filter with the rising flow of water.

ProMaqua has built up particular expertise in the field of filtration plant.

### Open sand filters with differential pressure controlled back washing and integrated back washing water storage tank, offer significant advantages:

- No control equipment  
The filter uses no valves, flow meters, controllers or display equipment for filtration and back washing, or final-rinse functions, in other words, no moving parts.
- No pump  
The volume of water required for back washing is held in the storage area inside the filter, which means there is no need for a back washing pump.
- No compressed air, pressurised water or electrical power  
All processes are controlled and driven by the filter itself.
- No parts to maintain  
No moving parts means no wear.
- No operating personell  
The filter works fully automatically and requires no external intervention.

### Design

The filtration plant consists of the following key elements:

- Cylindrical tank
- Internal fittings
- Automatic back washing system with injector
- Raw water inlet and feed tank
- Filter nozzles
- Filter material

Material: polyethylene PE-HD

Filter material: filter sands EN 12904, other filter materials on request

### Applications

The (SK) Gravity Filter is suitable for practically all filtration tasks and its uses include, for example, partial flow cooling water filtration, river, industrial and potable water treatment, iron removal from well water, waste water purification to reduce suspended solids, COD - BOD<sub>5</sub> and phosphate content (4<sup>th</sup> purification stage) etc.

### Optional additional equipment:

- Cover for the cylindrical tank
- Frost protection insulation with associated electric heating
- Combined air/water backwash
- Backwash water sump made from plastic PE-HD
- Other options on request

# Gravity Filter

## Technical Data

### Type list and capacity data

| Type          | Filter diameter | Filter capacity   | Back wash Water  | Weight empty | Weight in operation |
|---------------|-----------------|-------------------|------------------|--------------|---------------------|
|               | mm              | m <sup>3</sup> /h | ~ m <sup>3</sup> | ~ t          | ~ t                 |
| <b>SK- 9</b>  | 900             | 6.5               | 1.4              | 1.2          | 4.5                 |
| <b>SK- 12</b> | 1,200           | 11.5              | 2.5              | 1.5          | 7.1                 |
| <b>SK- 15</b> | 1,500           | 18.0              | 4.5              | 1.9          | 10.5                |
| <b>SK- 18</b> | 1,800           | 26.0              | 5.5              | 2.3          | 15.0                |
| <b>SK- 21</b> | 2,100           | 35.0              | 8.5              | 2.8          | 19.5                |
| <b>SK- 24</b> | 2,400           | 46.0              | 10.0             | 3.0          | 25.0                |
| <b>SK- 28</b> | 2,800           | 62.0              | 14.0             | 3.5          | 30.0                |

|  |                    |
|--|--------------------|
| Flow rate:   | 3 ... 10 m/h       |
| Backwash intervals:<br>(depending on type and amount of pollutants)        | approx. 8 ... 36 h |
| Head loss:   | 120 ... 150 mbar   |
| Clean water solids figure:<br>(depending on raw water and filter material) | 0 ... 3 mg/l       |
| Backwash flow rate::   |                    |
| at the start   | 44 m/h             |
| in the middle  | 37 m/h             |
| at the end   | 30 m/h             |
| Cylinder height:   | 4,500 mm           |
| (same for all types)   |                    |
| Overall height:  | 6,500 mm           |
| depending on filter diameter   |                    |
| Backwash and refilling time:   | 13 ... 15 min.     |
| Filter sand in accordance with EN 12904                                    |                    |
| – Height of bed  | 600 mm             |
| – Grain size range   | 0.71 ... 1.25 mm   |
| Filter nozzles:  |                    |
| – Type   | Lamellar nozzle    |
| – Material   | PPN                |
| – Slot width   | 0.2 mm             |

As system components are produced individually according to application, we will inform you of prices on enquiry.

We reserve the right to change components and their construction, as long as these do not affect their performance or function.

# Panel-Mounted Measuring/Control Stations

## DULCOTROL® Panel-Mounted Measuring/Control Stations

DULCOTROL® measuring/control stations are complete and compact online process measuring/control stations mounted on a PE panel which can be installed as plug&play modules into a process water bypass. They are divided into the following series which are assigned to the important applications of water treatment and which include customised components suitable for the target application.

- DULCOTROL® drinking water/F&B
- DULCOTROL® cooling water
- DULCOTROL® waste water

In these model series, 1-3 measured variables can be configured specific to the sample water on one panel. The measuring devices can be equipped with a measuring function or numerous control functions as required. A compatible filter, pressure reducer, heat exchanger, a sample water pump and a peristaltic pump can be optionally ordered for sample water conditioning. Measurement panels from two controllers onward include a terminal box for a safe electrical connection. All connecting cables are routed in a cable conduit.

- DULCOTROL® free chlorine - pH-independent

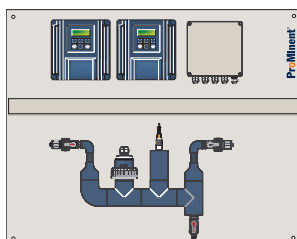
These model series facilitate measurement/controlling of free chlorine at high or unstable pH values in all applications mentioned above. For this purpose, a pH buffer solution is metered into the sample water by-pass via a peristaltic pump.

For all DULCOTROL® series, the desired layout of the measuring station can be easily configured through an user-orientated Identcode system.

### DULCOTROL® Waste Water

The measuring/control stations DULCOTROL® waste water are used in all industry segments where waste water is treated. The following applications may e.g. be covered:

- pH neutralisation and pH value adjustment
- Disinfection of clarified water
- Decontamination of waste water by eliminating reductives and oxidants
- Monitoring of rinsing water
- Desalination of process water
- Control of the dissolved oxygen in the biologic clarification stage



pk\_6\_202\_c

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Subject to technical amendments.

The Product catalogue 2011  
will replace all previous catalogues  
and price lists.

Heidelberg, September 2010

